Small Business Innovation Research/Small Business Tech Transfer

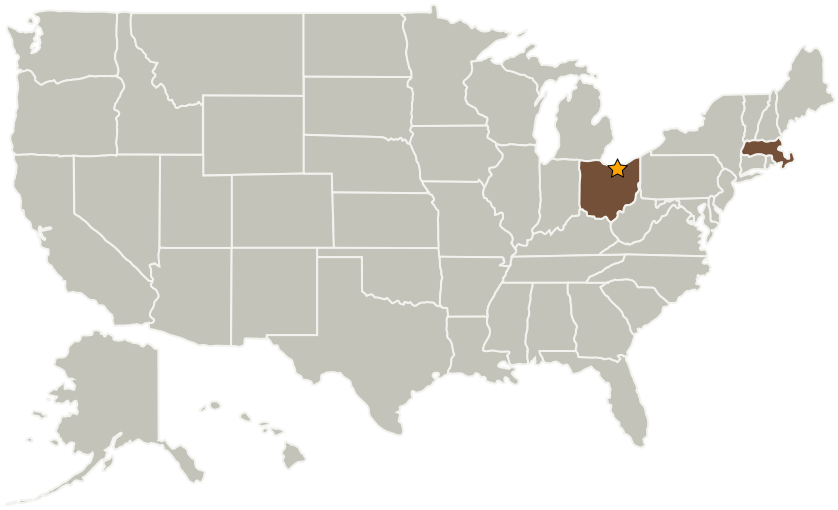
High Performing, Low Temperature Operating, Long Lifetime, Aerospace Lubricants, Phase II

Completed Technology Project (2009 - 2011)

Project Introduction

Physical Sciences Inc. (PSI) proposes to synthesize, characterize, and test new ionic liquids and formulations as lubricants for aerospace applications. The compounds will have low vapor pressures/outgassing and appropriate thermal stability. Upon addition of the innovative ionic liquids to the base lubricants, a 20% decrease in viscosity, friction coefficient, and wear will result. Minimal corrosive effects of the formulations at will be observed. The formulations will be shown more effective as liquid lubricants for use at low temperatures (-70oC) with long-term operational stability in aerospace systems. Several new ionic liquids will be scaled and a novel formulation will be evaluated in a NASA test bed. The technology will be at a TRL range from 3-4 upon completion of Phase II.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Physical Sciences, Inc.	Supporting Organization	Industry	Andover, Massachusetts

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

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Primary U.S. Work Locations	
Massachusetts	Ohio

Project Transitions

December 2009: Project Start

December 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.3 Mechanical Systems
    - TX12.3.7 Mechanism Life Extension Systems